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NOTES ON KANSAS ORTHOPTERA.

By F. B. ISELY, Wichita, Kan.

Read before the Academy, at Topeka, December 30, 1904.

THE Orthoptera fauna of the vicinity of Wichita was the subject for special study in connection with a correspondence course in faunistic zoology, taken by the writer during the past year, 1903-'04, under the direction of Dr. C. B. Davenport and Mr. F. E. Lutz, of the University of Chicago.

A small collection, of about 800 specimens, including ninety-seven species, was made. Notes were taken, giving attention to habitat, physiography, habits, seasonal range, and geographical distribution. This paper is based on the collection made and notes taken in connection with this work, the field of study being somewhat extended.

Habitat and seasonal range are given principal consideration. Most of the observations with reference to habits, especially movements and stridulation, are withheld for later report and further study. While most of the species secured are common, several interesting and rare specimens have been taken. To the student of Orthoptera the mere record of locality will be of some value. As far as can be ascertained from Scudder's Index, thirty-four species are reported from Kansas for the first time.

Mr. A. N. Caudell, of the United States National Museum, has kindly passed the specimens in review, so that the identification is assured. The writer is especially indebted to Mr. Caudell for his aid and courtesy, and to Mr. F. E. Lutz for many helpful suggestions.

The various places where collecting was done are here briefly described, to save repetition in the notes.

WICHITA (37° 40' N. Lat., 97° 20' E. Long.) Four different localities at Wichita need special mention.

1. *Fairmount.* Fairmount is a small suburb, three and one-half miles northeast of the business center of Wichita, and is the seat of Fairmount College. Fairmount has an altitude of 1380 feet and is 100 feet above the city. Several large prairie pastures, wheat, and alfalfa-fields are in the near vicinity. The writer's residence has been 1337 Fairmount avenue. Fairmount and vicinity were thoroughly searched for specimens, several field trips being made each month from January to December. Seventy-six species were taken on Fairmount during the year. In two hours' time, on September 24, 1904, thirty-three different species were taken in a pasture east of Fairmount.

2. *Cemetery*. Maple Grove cemetery, south of Fairmount, has an altitude of 1350 feet. This place is often mentioned in the notes.

3. *Riverside Park*. The park is located a mile northwest of the business center of the city, and is traversed by the Little Arkansas river. The altitude is about 1260. Several trips were made to the park. Specimens were taken along the river and near Dale's pond not found elsewhere.

4. *Chisholm Creek*. Chisholm creek flows south through the east part of Wichita and about a mile west of Fairmount. Several trips were made in search of specimens along the creek.

CLEARWATER. Clearwater is sixteen miles southwest of Wichita, via the Missouri Pacific railroad. Here several days were spent in collecting — December 28 and 29, 1903; and during the present year, 1904, May 7, June 30, July 1-4, August 29-31, and November 19. The collecting-ground was on the Nickerson farm, three miles west of Clearwater, in the Ninnescah river valley. The river bounds the farm on the north. The soil for three-fourths of a mile south is sandy, and shades off into a sandy loam as you reach the higher land. The altitude is from 1240 to 1300 feet. Several interesting specimens were taken in this vicinity.

SEDGWICK. One day, September 17, 1904, was spent on the Finn farm, one mile southeast of Sedgwick, Kan. Some time was spent in Harvey county, as the Finn farm is just on the county line. The altitude of Sedgwick is 1400 feet.

HIAWATHA. Located in the central part of Brown county, in the northeast part of the state; altitude, 1075 feet. As the writer taught in the Brown county institute during August, some collecting was done in this vicinity.

FAIRVIEW. On the Isely farm, two miles north and one-half mile west of Fairview, in the west part of Brown county. Collecting was done August 6-8, 13-15, 20-22, 1904. All Fairview specimens come from the Isely farm; altitude, 1200 feet. The farm is traversed by Spring creek, and on the banks south of the creek some specimens were taken that were not found elsewhere.

ATCHISON. August 1, 1904, several hours were spent among the hills in the east part of the city; also some time along the Missouri river.

1. *Labia minor* Linn.

Two males were taken at light October 1, 1904.

2. *Ischnoptera pennsylvanica* DeGeer.

This roach is common, being found beneath trash, bark, boards, in beehives, and moist, protected places. Half-grown specimens were taken on December 28, 1903, under the bark of cottonwood stumps along the Ninnescah river, on the Nickerson farm, Clearwater, Kan. Nymphs were taken under cottonwood

bark, May 18, 1904, along the Little Arkansas, in the city park. The first adult, a male, was taken June 22, 1904, under old tin in the park. July 1, 1904, a large number of both sexes were taken beneath trash along the Ninnescah river, on the Nickerson farm. August 15, 1904, nymphs and adults were secured in the tops of beehives on the C. H. Isely farm, Fairview, Kan.

3. *Blattella germanica* Linn.

Found in dwelling-houses, meat shops, hotels, water-pipes, and similar situations. In a large tenement block in Wichita this "croton bug" was so serious a pest as to make rental impossible. I have found it in adult and nymph stages through the year. In a vinegar factory visited the 13th of April, 1904, this roach was a serious nuisance.

4. *Blatta orientalis* Linn.

Found in company with *B. germanica*, having very similar range as to habitat and seasonal distribution.

5. Unnamed *Blattidæ*.

Nymphs taken from beneath stones in an open field on Fairmount, during all the winter and spring months. Two adults taken at the same place as these nymphs, June 21, 1904. Two at light June 17, 1904.

6. *Stagmomantis carolina* Linn.

Found in tall grass, weeds, and around light. Eggs kept in the high-school laboratory hatched early in April. Adults are common from August to October.

7. *Diapheromera femorata* Say.

As many as a dozen specimens were taken July 3, 1904, north of 1636 Holyoke avenue, Fairmount, feeding on grass and weeds.

8. *Diapheromera veliei* Walsh.

Two specimens, on the open prairie in a large pasture on the Nickerson farm, September 3, 1904. New to Kansas.

9. *Nomotettix accuminatus* Hanck.

Three specimens, one male and two females, found on south bank of Spring creek, Isely farm, August 21, 1904. This species was first reported from Kansas and by Scudder's Index; is not reported elsewhere.

10. *Tettix hancocki* Morse.

One specimen, sent to me by Dwight B. Isely, from Fairview, Kan. Taken in a meadow September 24, 1904.

11. *Tettix obscurus* Hanck.

Found on a moist, sandy bank, along the Little river, in the park. Two male specimens, April 12, 1904. A pair mating June 22.

12. *Paratettix cuculatus* Brun.

This is the most common of the grouse locusts found in the state. It frequents moist banks of streams and ponds, and will occasionally be found quite remote from water. Specimens have been taken on the Ninnescah and Little Arkansas rivers, also at numerous small ponds in Sedgwick county, on Sand creek, in Harvey county, along the Missouri river, in Atchison county, and along Spring creek, in Brown county. From June to October specimens of this species have been found in situations suitable to their liking.

13. *Tettigidea parvipennis* Harr.

Found in company with *T. obscurus*. Only one pair secured, June 22, 1904. The last three species are not listed in Scudder's Index as being reported from Kansas. Mr. F. E. Lutz, however, informs me that they are reported from Kansas in Doctor Hancock's monograph.

14. *Mermiria bivittata* Serv.

This interesting angle-head frequents prairie pastures and meadows. It reaches maturity in Sedgwick county about the middle of July and is found until October. The first specimens, males, were taken in tall grass along the Frisco railroad east of Fairmount. In Brown county only one immature female was taken, August 20, 1904. Stridulation while at rest is one of the characteristics of the males.

15. *Opeia obscura* Thos.

This species was found only in short grass on the hilltops, especially buffalo-grass. Only a few specimens were taken and all were females; these on different dates in September.

16. *Eritetix carinatus* McNeill.

This species is also found in pastures. Several specimens were taken on the Nickerson farm May 7, 1904; others in the Maple Grove cemetery June 14. Later in the season no specimens could be found. October 30 and November 6 I found two larvæ in the third molt. When we couple this record with its early appearance in the spring, it shows that this species hibernates in the nymph stage. Prof. W. S. Blatchley says of the subfamily Tryxalinæ; "The winter of all is passed in the egg stage." Here certainly is an exception. The male of this species, like *M. bivittata*, has the interesting method of stridulating when at rest. On Decoration day, in the Maple Grove cemetery, I observed several males intent on sound-making. New to Kansas.

17. *Eritetix tricarinatus* Thos.

Only one specimen, a female, in a pasture east of Fairmount, in short grass, July 21, 1904. New to Kansas.

18. *Syrbula admirabilis* Uhl.

This handsome locust is found only on the upland prairies in tall and short grass. It is rather common and reaches maturity late in August.

19. *Dichromorpha viridis* Scudd.

Unlike the other *Tryxalinæ* noted, this species is not especially fond of the prairies. It is often found in brushes, and in shrubbery around houses; also in timber margins and shaded places. It reaches maturity early in July and is found until October. The first adult in my collection was taken July 8, 1904. In Atchison county, on August 1, I found this species as one of the most common *Acrididæ* among the hills east of the city. I have taken specimens in Sedgwick, Brown, Atchison and Harvey counties. The green form is more common than the brown. One specimen, a female, of the long-winged variety, *punctulata*, was taken at Sedgwick, on the Finn farm, September 17, 1904. Mr. Caudell, writing from the National Museum, says: "We have no specimens of this variety in the collection." New to Kansas.

20. *Orphulella speciosa* Scudd.

Exceedingly common in short grass, especially buffalo-grass. Found equally abundant on high and low ground. Reaches maturity by the middle of July in Sedgwick county. First adult taken July 14, 1904. This species was found in all the counties where collecting was done, but is far more common in Sedgwick than in the northeast part of the state.

21. *Boopedon nubilum* Say.

Only one male specimen, taken July 13, among weeds in a pasture, on Fairmount.

22. *Ageneotettix scudderi* Brun.

This species was also found in all places where I have collected. It is especially abundant in short grass, on hilltops and bare places. It is very common in favorable situations. It reaches maturity early in July in Sedgwick county. First specimen July 14, 1904. Heretofore reported from Kansas by its synonyms, *Aulocara scudderi* Brun. (Proc. U. S. Nat'l Mus., XII, pp. 63, 64, 1890); also its other synonym, *Philostroma parvum* Scudd. (Bull. Wash. Coll., I, p. 199, 1886).

23. *Arphia luteola* Scudd.

In Sedgwick county this is one of the most common Acrididæ during the latter half of June and 1st part of July. Later it seems to give way to others. It frequents open fields, short bunch-grass, and cattle paths in the prairies. The wings are a pretty bright-yellow and the male flies with a loud crackling sound. These *Arphia* are much easier to catch than either of the above. They seem to be a Southern and Western species, being reported from Texas, Utah, and Colorado, but not from Kansas up to this time. The first adult was taken May 30, 1904; several specimens June 14 and July 3.

24. *Arphia sulphurea* Fab.

Four specimens of this species were taken on May 7, 1904, on the Nickerson farm, in waste ground along the Ninnescah river. A few more were taken a little later in the season, and one on August 24, at Fairview. This species winters in the nymph stage. Heretofore not reported from Kansas.

25. *Arphia xanthoptera* Germar.

This species frequents open prairies, is abundant along roadsides and in alfalfa-fields. It reaches maturity late in August. Several specimens were taken August 20 on the Isely farm. During September it is very common in Sedgwick county. The males have a quick, jerking flight, and make a cackling sound while on the wing. New to Kansas.

26. *Chortophaga viridifasciata* DeGéer.

This species is especially interesting on account of the long period of adult activity. It is found pretty generally distributed in open fields and on the prairies, but seems especially to be found in the lowlands near streams. The brown form, infusate, is the most numerous early in the spring, viridifasciata not being prevalent until May. I have taken nymphs in every month from November to July, and adults from March to November. I have nymphs in my collection November 21 and December 28, 1903; February 27, March 19, and May 30, 1904. The first adult was taken March 29, 1904, among dry weeds along the Little river, in Riverside park. On this date I secured seven specimens. New to Kansas.

27. *Encaptolophus sordidus* Burm.

This is a fall species. It reaches maturity about the middle of August, and is fairly common until November. It is found in fields and pastures. The male makes a sharp, crackling sound during flight. The first adult was taken August 20, in Brown county. Specimens were seen in Sedgwick county November 24, 1904.

28. *Hippiscus haldemanii* Scudd.

I secured in all ten specimens of this species; July 3, two males and five females. They are found in pastures and fields. Later in the season they seem to pass by to give room for others.

29. *Hippiscus rugosus* Scudd.

This is a fall species, reaching maturity about the middle of August.

It is very common among bunch-grass and on hillsides. On September 24, 1904, along a grassy upland road in Harvey county, hundreds of this species flew before the team as we drove along the road.

30. *Hippiscus tuberculatus* Palde Beauv.

One specimen of this fine-looking locust was taken April 24, 1904, on Fairmount hill. Mr. Caudell has not seen this specimen, but I feel sure that the identification is correct.

31. *Dissostertia carolina* Linn.

This roadside grasshopper reaches maturity in Sedgwick county about July 1. After this date it is common along roads, paths, railroad tracks and bare places. Of all Acrididæ, it is one of the most difficult to secure. Taken in Sedgwick, Brown and Atchison counties.

32. *Spharagemon cristatum* Scudd.

This species was not found around Wichita. In sandy fields and pastures on the Nickerson farm it was numerous in June and July. It is certainly well adapted in color to the sandy soil it frequents. June 30, 1904, was the date that the first adult was taken. This species is new to Kansas.

33. *Mestobregma plattei* Thos.

The gray, ashy, gypsous soil of the bare hillsides east of Fairmount is especially suited to protect this species. In suitable situations, they are to be found in small numbers from the middle of July until cold weather.

34. *Mestobregma kiowa* Thos.

This species is found in company with *plattei*, which it resembles. It is however much more numerous. I have taken specimens in Harvey, Brown and Sedgwick counties.

35. *Trimerotropis citrina* Scudd.

Only on the white drift sand along the Arkansas and the Ninnescah rivers have I been able to find this species. Adult specimens were not secured until September. Others were taken as late as November 20, 1904. This species is exceedingly wary and hard to catch. I have started them as many as twenty times before being able to get near enough to net them. New to Kansas.

36. *Hadrotettix trifasciatus* Say.

This species, as taken in Sedgwick county, is perhaps the best adapted to its surroundings of any Acrididæ observed. In my field-notes of July 16, I observe: "This handsome large locust was found only on the bare ground on the west side of a ridge where the light colored, ashy gypsous soil is exposed. They seem to feel that they are entirely secure and could be caught with the greatest ease when once seen. The adaptation to soil color is striking."

37. *Schistocerca americana* Drury.

This well-known species is found in fields and pastures. Very often a single specimen will be flushed, rise ten to fifteen feet high and fly rapidly ten to twenty rods, lighting, if possible, on some tall weeds, bushes, or trees. I have seen adult specimens from April to November. Blatchley suggests that the early spring species are migratory, flying in from the south.

38. *Schistocerca alutacea* Harr.

This species is found in tall prairie-grass, especially in low places. It reaches maturity about the middle of August. Found in Brown and Sedgwick counties.

39. *Hesperotettix pratensis* Scud.

This is not a numerous species in Sedgwick county. I took several specimens in the rank-growing prairie-grass on Fairmount. My field-notes for

July 9 read as follows: "This pretty little locust is just reaching maturity. I secured seven specimens, five males and two females, on the prairie north of 1626 Holyoke."

40. *Hesperotettix speciosus* Scud.

Found in situations similar to the above, but especially along sloughs. It is not a numerous species in Sedgwick county, and reaches maturity late in July. Prof. Lawrence Bruner says that they feed on several species of *Helianthus*.

41. *Hypochlora alba* Dodge.

Found in pastures and waste fields, especially on a silver-colored sage-weed, to which it is well adapted by protective coloration. It reaches maturity about the middle of July, and is found until October. Several specimens were taken at Wichita July 20, 1904.

42. *Campylacantha olivacea* Scud.

Found in pastures and waste fields in company with *M. gracilis*. Reaches maturity late in July.

43. *Melanoplus atlantis* Riley.

One of the most widely distributed species found in Sedgwick county. Upland prairies, waste fields, stubble, along streams, and in meadows. In no one place, however, was the Lesser locust found in large numbers. First adult specimen taken May 30, 1904. Common from June to November.

44. *Melanoplus bivittatus* Say.

The Two-lined locust is common early in July in pastures and along roadsides. Several specimens taken on Fairmount July 8, 1904.

45. *Melanoplus coccineipes* Scud.

Only two specimens secured, male and female; found in waste field, sandy soil, Nickerson farm, June 30, 1904.

46. *Melanoplus differentialis* Uhler.

Very common; found in fields, gardens, and roadsides. Reaches maturity by the middle of July. Taken in Brown, Sedgwick and Harvey counties.

47. *Melanoplus femur-rubrum* DeGeer.

The common red-legged locust is found everywhere that vegetation grows, from the middle of August to November. Alfalfa-fields, however, are favorite places. A small alfalfa field on Fairmount was mown the afternoon of September 14, 1904. By sweeping in the tall grass growing along the north side of the field I secured 161 adult Acrididæ. Of these, 121 were *femur-rubrum*; fifty-one males, seventy females. My notion would be that this species would average one-half bushel or more to the acre in the alfalfa-fields of Sedgwick county any time during September.

48. *Melanoplus gracilis* Brun.

Found along sloughs, in waste fields, and in gardens. Reaches maturity late in July. Not reported from Kansas.

49. *Melanoplus impiger* Scudd.

Only three specimens of this species in my collection. Taken in a prairie pasture on the Nickerson farm, August 31, 1904.

50. *Melanoplus luridus* Dodge.

This species is rather common on the open prairies in September. It did not come under my observation until September 7, 1904, when several specimens were taken on Fairmount. Afterward it was found to be fairly numerous.

51. *Melanoplus minor* Scudd.

Found in pastures and meadows; common during June, but not numerous. First adult taken June 4, 1904. Not reported from Kansas.

52. *Melanoplus packardii* Scudd.

Found on the prairies and in the waste fields. Very variable in color. Reaches maturity by the middle of July. Earliest specimen in my collection, July 19, 1904.

53. *Melanoplus plumbeus* Dodge.

Rare in Sedgwick county. Only three specimens were taken; these on different dates in September. One found in the high school yard, Wichita, others in a pasture. One female specimen taken at Hiawatha, August 20, 1904.

54. *Melanoplus scudderii* Uhler.

This species reaches maturity late in August, and is abundant on prairies and waste fields. One specimen taken in Brown county, on the Isely farm, August 22, 1904.

55. *Phœtaliotes nebrascensis* Thom.

Fairly common on the prairies in September. First taken in the pastures on the Nickerson farm, August 29, 1904. Reported in the Washburn College Bulletin, I, 136, 137 (1885), by its synonym, *Pezotettix nebrascensis* Thom.

56. *Scudderia texensis* Sauss Pictet.

Two specimens were taken in tall weeds along Spring creek, August 15, 1904; two other specimens, in a similar situation, August 30, along the Ninnescah river; all females. New to Kansas.

57. *Scudderia furcata* Brun.

Found in company with *S. texensis*, but more common. First taken August 21, 1904, on the Isely farm; later, in September and October, at Clearwater, Wichita, and Sedgwick.

58. *Arethæa gracilipes* Thom.

This species was found on the open prairies east of Fairmount during July. Only a few specimens were taken.

59. *Amblycorypha iselyi* Caud., n. sp.

Seven specimens, three males and four females. Two pairs were sent to Mr. A. N. Caudell, who pronounces this a new species. I take the following from my field-notes, July 12, 1904: "A species of katydid caught on the vines at the Lewis residence. The males begin their music a little after sundown, but are not in full chorus before nine P. M. Caught five specimens, one male and four females—the females by sweeping across the woodbine vines about nine P. M. Many males were heard on the vines and weeds near this place, but they were cautious and hard to approach; only one was secured. No good reason can be assigned why they should be found only near the Lewis house, but nowhere else on the hill were they found. Females measure as follows: Body, 29 mm.; tegmen, 25 mm.; width of tegmen, 9 mm.; femur, 27 mm.; antennæ, 35 mm.; pronotum, 8 mm.; ovipositor, 12½ mm."

Mr. Caudell's description, taken from the Journal of the New York Entomological Society, volume XIII, page 50, follows: "In size comparable with *A. rotundifolia*, but differing from that species in having the elytra more rotundate and the wings aborted, not reaching the tips of the elytra, in this respect allied to the larger *parvipennis* of Stal. Ovipositor of about the same length and shape as that of *rotundifolia*, but a little stouter. Pronotum flat above, the lateral carinæ sharp and persistent. Hind femora extending considerably beyond the tips of the elytra in both sexes. Length of pronotum, male, 7.5 mm.; female, 8 mm.; elytra, male, 22.5 mm.; female, 25 mm.; hind femora, male, 25 mm.; female, 26 mm.; of hind femora beyond the tips of the elytra, male, 6.5 mm.; female, 7 mm.; ovipositor, female, 10 mm.; width of elytra, male, 9 mm.; female, 9 mm.;

of pronotum in front, male, 3.25 mm.; female, 3.5 mm.; behind, male, 4.75 mm.; female, 5 mm.

"Type.—No. 8197, U. S. National Museum."

60. *Amblycorypha haustica* Sauss.

Two specimens, females, taken on the prairie on Fairmount, July 20, 1904.

61. *Amblycorypha oblongifolia* DeGeer.

Only two specimens, at Wichita; both females. Taken on the prairie east of Fairmount, September 24. At Fairview, Kan., August 15, 1904, several male specimens were secured after nine p. m. on the Isely farm. While several species of *Conocephalus*, *Ecanthus* and *Microcentrum laurifolium* were heard at dusk and a little later, this *Amblycorypha* did not appear until an hour and one-half after sunset. This I noted to be the case on several evenings. New to Kansas.

62. *Microcentrum laurifolium* Linn.

Frequents shrubs, trees, and vines, and is also attracted by light. Common during August and September.

63. *Conocephalus crepitans* Scudd.

Found in tall grass, and especially in cane-fields. Common in Wichita during September.

64. *Conocephalus ensigner* Harr.

Found in tall grass and weeds. I have taken it only after dark, when the males may be easily located by their loud stridulation. First taken at Wichita July 20, 1904; later, in August, at Fairview, and at Wichita again in September. Only one female secured. This is a common species. New to Kansas.

65. *Conocephalus robustus* Scudd.

First specimen taken July 30, 1904. Very common during latter part of August and September. Found in tall grass, weeds, and cane-fields. The males begin their music a little before sundown. During the latter part of September, 1903, they were especially numerous at Wichita. They swarmed in great numbers around the electric lights and covered the walks in the morning. The local papers commented on the "unusual insect hordes." New to Kansas.

66. *Conocephalus nebrascensis* Brun.

This species was taken only at Fairview. Three specimens, all males, were taken on shrubs after dark September 15, 1904. Unlike the other members of this genus so far observed, this species is found among trees and bushes, rather than out in the fields and on the prairie. Not reported from Kansas.

67. *Orchelimum agile* Desur.

Reaches maturity late in July, and is found upon bushes, small trees, weeds, and tall grass. Numerous in Sedgwick county.

68. *Orchelimum glaberrimum* Brun.

Very common in grass and weeds along streets and roadsides. Reaches maturity early in August. Found at Fairview, Clearwater, Hiawatha, Sedgwick, and Wichita.

69. *Orchelimum gossypii* Ashm.

One specimen sent to me by Dwight B. Isely, caught in corn-field September 22, 1904, Fairview, Kan. New to Kansas.

70. *Orchelimum longipenni* Scudd.

Only three specimens. Two taken at Hiawatha, Kan., August 19, 1904, and one at Clearwater August 30, 1904. Those at Hiawatha found in tall weeds along the streets of the city.

71. *Orchelimum nitidum* McNeill.

One specimen, a female, on a small tree in my front yard, secured September 7, 1904, Wichita, Kan. New to Kansas.

72. *Orchelimum nigripes* Scudd.

Very common along streams and ponds. Ten specimens, seven males and three females, were taken in tall slough-grass along the Little river in the city park, October 3, 1904.

73. *Orchelimum vulgare* Harr.

Common at Hiawatha and Wichita in grass and weeds during August and September.

74. *Xiphidium attenuatum* Scudd.

Only one specimen, a female; taken October 3, 1904, in the city park, in tall grass near the river. New to Kansas.

75. *Xiphidium ensiferum* Scudd.

One female specimen, secured by Mrs. Mary N. Isely on a bush in the yard, September 15, 1904. Not reported from Kansas.

76. *Xiphidium fasciatum* DeGeer.

Reaches maturity the latter part of July. Found in tall and short grass along sloughs, streams, and low ground. Taken at Atchison, Hiawatha, Fairview, Wichita, Sedgwick, and Clearwater. Very variable as to wing length.

77. *Xiphidium nemorale* Scudd.

Found on the open prairies. First specimen reported from Wichita July 27, 1904. Several specimens, both male and female, taken during August and September. Rather rare. Not reported from Kansas.

78. *Xiphidium saltans* Scudd.

Tall grass, damp situations. Several specimens taken at Fairview August 9, 1904.

79. *Xiphidium strictum* Scudd.

This is the most common member of the genus. Reaches maturity early in August. Found on the open prairies and in alfalfa-fields. "On September 14, 1904, a little after sundown, in sweeping the tall grass along the north side of a small alfalfa-field that had been mown that afternoon, I secured seventy-six specimens of this genus, thirty-two males and forty-four females. Of the females, the ovipositor of thirty-eight measured about 22 mm.; of the remaining six the ovipositor measured 17 mm. These measurements class the first lot as *X. strictum* and the six as *X. saltans*. The males would doubtless show a like proportion." (From my field-notes, September 14.)

80. *Udeopsylla nigra* Scudd.

Found under stones, clods, and boards. Nymphs taken in November, March, and June. Adults were numerous in wheat-fields early in July.

81. *Ceutophilus* sp.

Found in wheat stubble in large numbers, Nickerson farm, August 30, 1904. Mr. Caudell writes that Professor Blatchley, to whom he referred this species, regards it as close to *spinosus*, and also allied to *blatchleyi* and *uhleri*.

82. *Ceutophilus* sp.

One female specimen secured October 14, 1904, near a sidewalk, about six P. M. Probably *C. latens* Scudd.

83. *Stipator nigromarginata* Caud.

One female specimen, Nickerson farm, September 30, 1904. Found in a prairie pasture. New to Kansas. Mr. Caudell writes: "We have no male specimens. I hope you may find some."

84. *Gryllotalpa borealis* Brun.

One specimen, a male, was taken October 15, 1904. This was located by its stridulation. Found in a burrow, in a slough on Fairmount. Several were heard along the margin of a small pond in the cemetery. (Mr. Caudell has not seen this specimen.)

85. *Myrmecophila* sp.

Several specimens found in company with ant colonies under stones. Fairmont, April 30, 1904.

86. *Nemobius carolinus* Scudd.

I take the following from my field-note book: "June 22, 1904, visited Riverside park. In the rushes southwest of Dale's pond I found a pretty little nemobid, very active and difficult to catch. After a careful search for an hour, I secured six specimens, three males and three females." New to Kansas.

87. *Nemobius exiguus* Scudd.

Specimens of this species have been taken at Fairview, Clearwater, and Wichita. The first were taken along Spring creek on the Isely farm. They were found under stones in wet places. Several specimens, male and female, adults and nymphs, were taken August 14 and 20, 1904. On the Nickerson farm I secured two females August 31, 1904; these were taken in a stubble-field. One female was taken under a log in Matheson's grove October 13, 1904. The specimens taken along Spring creek were mottled with gray while the others were brownish-yellow in color. Prof. W. S. Blatchley, to whom Mr. Caudell referred the Spring creek specimens, says the two are the same. The habitat, as the notes indicate, is very different. Not reported from Kansas.

88. *Nemobius fasciatus* DeGeer.

During August and September this species was very numerous; found everywhere in the open fields, along walks in town, and on lawns. This is especially true of the form *vittatus*, which was first taken in a slough west of the park, July 23, 1904. Later taken at Hiawatha, Atchison, Fairview, Clearwater, and Sedgwick. The macropterous form of this species was taken at light in Hiawatha and Wichita.

89. *Gryllus abbreviatus* Serv.

Very numerous from August to October. Found everywhere in fields, under walks, and on the prairies. Hundreds of specimens were seen in a stubble-field that was being plowed on the Nickerson farm August 30, 1904. Long- and short-winged forms were equally abundant.

90. *Gryllus pennsylvanicus* Brun.

This species passes the winter in the nymph stage. On Fairmount nymphs were taken under stones in March, April, May, and June. The first adult was taken June 18, 1904. By the last of June they were very numerous, the merry chirp of the male resounding from every crevice, mouse hole or crack in the ground in fields and pastures. Two females of the macropterous form were taken beneath sand-bags in the city July 17, 1904.

91. *Miogryllus oklahomæ* Caud.

This is the first cricket to reach maturity at Wichita. The first adult was taken on the cemetery hill south of Fairmount, May 22, 1904. In a few days they became very numerous and the males' stridulation could be heard on all sides in the afternoon and evening. They were especially abundant in the thick, short, dead grass on cemetery hill. This species is of special interest, as will be shown by the following reference to a letter from Mr. Caudell. Under date of August 30, 1904, he writes: "The small gryllid in the vial from Wichita, G 4, is

my *Miogryllus oklahomæ*. These two specimens, male and female, are the only specimens known except the *single male* type. This is the *first female* specimen seen, and is apparently remarkable for the very short ovipositor. I hope you will find more of this species." Eleven specimens were secured, six males and five females. Four are now in the United States National Museum collection and two in Dr. F. H. Snow's collection at the University of Kansas. I still have five specimens in my collection. As no one else has studied this species in the field, I add the following habit notes from my field-note book: "May 31, 1904.—Located three little brown crickets in small burrows from one to one and one-half inches deep. Dug out three males, all in similar situations, and caught one female wandering about in the open. They certainly are very, very difficult to catch. When you are from five to ten yards away they stop their stridulation and often refuse to start again—stand as quiet as you please. The sound is also very hard to locate. Sometimes you think you are near and you are still five or more yards away. The burrows are small and often perpendicular. They look very much as though they were made for the crickets' special use. Three specimens were taken beneath stones. No specimens were secured after June 23, 1904. New to Kansas.

92. *Miogryllus saussurei* Scudd.

Only five specimens of this species were taken, four females and one male; found under stones on the north slope of a clay hill on the Isely farm, August 8, 1904. New to Kansas.

93. *Æcanthus argentinus* Sauss.

Only one specimen taken, by Dwight B. Isely, Fairview, Kan., September 24, 1904. New to Kansas.

94. *Æcanthus augustipennis* Fitch.

This species is numerous and reaches maturity late in August. It is arboreal and most successfully taken by clubbing. By this method I secured a large number of specimens after dark September 7, 1904. New to Kansas.

95. *Æcanthus fasciatus* Fitch.

This is a very common species and is found everywhere in tall grass, weeds, and wheat-fields. It reaches maturity early in July. New to Kansas.

96. *Æcanthus niveus* DeGeer.

This is strictly an arboreal species; often only heard in the tree tops. It reaches maturity late in July and is common until October. After dark, on September 7, 1904, I secured a number of specimens by clubbing.

97. *Æcanthus quadripunctatus* Beut.

This species is also common and is found in fields and pastures. The first specimens of the season were taken in a pasture on the Isely farm August 21, 1904. New to Kansas. This and the three preceding species were found at Wichita, Clearwater, and Fairview.